**Comsats University Islamabad**

**Attock Campus**

**Assignment 2**

**Subject**

**Data Structures**

**By**

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**Introduction:**

This is a simple C++ program that simulates a Hospital Emergency Room System using a priority-based queue. Patients are treated based on their emergency level (1 = High, 2 = Medium, 3 = Low). The system lets users add patients, sort them by priority, and display the treatment order.

**Functions Overview:**

| **Function Name** | **Purpose** |
| --- | --- |
| addPatient() | Takes input from user and stores patient info in an array |
| sortPatientsByPriority() | Sorts the array based on emergency level using bubble sort |
| showTreatmentOrder() | Displays the list of patients in sorted (treatment) order |
| main() | Displays menu, takes user choice, and calls relevant functions |

**How the Code Works**

1. User is shown a menu:
   * Add a patient
   * Show treatment order
   * Exit
2. When adding a patient:
   * User enters name and emergency level
   * Patient info is stored in an array
3. When showing treatment order:
   * Patients are sorted by priority (low number = higher priority)
   * Displayed in the correct order
4. Loop continues until the user chooses to exit.

**Pseudo Code:**

START

DECLARE Patient array

SET patientCount = 0

FUNCTION addPatient:

INPUT name and emergencyLevel

STORE in patient array

INCREMENT patientCount

FUNCTION sortPatientsByPriority:

FOR i from 0 to patientCount - 1:

FOR j from 0 to patientCount - i - 1:

IF patient[j].level > patient[j+1].level:

SWAP patient[j] and patient[j+1]

FUNCTION showTreatmentOrder:

IF no patients:

DISPLAY "No patients"

ELSE:

CALL sortPatientsByPriority

DISPLAY sorted list

MAIN FUNCTION:

LOOP until user chooses exit:

SHOW menu

GET user choice

IF 1 → CALL addPatient

IF 2 → CALL showTreatmentOrder

IF 3 → EXIT

END